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Neurotoxicity and dysfunction of dopaminergic systems associated with AIDS dementia.

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Infection with the human immunodeficiency virus (HIV) selectively targets the basal ganglia resulting in loss of dopaminergic neurons. Although frequently asymptomatic, some patients may develop signs of dopamine deficiency de novo. Accordingly, they are highly susceptible to drugs that act on dopaminergic systems. Both neuroleptics and psychostimulants may exacerbate these symptoms. Experimental evidence suggests that viral proteins such as gp120 and Tat can cause toxicity to dopaminergic neurons, and this toxicity is synergistic with compounds such as methamphetamine and cocaine that also act on the dopaminergic system. In addition, other neurotransmitters that modulate dopaminergic function, such as glutamate and opioids, may also modify the susceptibility of the dopamine system to HIV. Therefore, a thorough understanding of the mechanisms that lead to this selective neurotoxicity of dopaminergic neurons would also likely lead to the development of therapeutic modalities for patients with HIV dementia.

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